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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/602,927	06/24/2003	Jean Merrill	USAV2001/0172USNP	1793

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EXAMINER	
XIE, XIAOZHEN	

ART UNIT	PAPER NUMBER
1646	

DATE MAILED: 03/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/602,927	MERRILL ET AL.	
	Examiner	Art Unit	
	Xiaozhen Xie	1646	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 March 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17* is/are pending in the application.

4a) Of the above claim(s) *1-6 and 14-17* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *7-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *20040712, 20041206*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Status of Application, Amendments, And/Or Claims

The Information Disclosure Statement (IDS) filed 12 July 2004 and 6 December 2004 has been entered in full. Applicant's amendment of the claims filed 8 March 2006 has been entered.

Election/Restriction

Applicant's election with traverse of Group II, claims 7-13 in the reply filed on 8 March 2006 is acknowledged. The traversal is on the ground(s) that Applicant has amended Claim 7, the independent claim of Group II, to depend from Claim 1, the independent claim of Group I, and therefore, Groups I and II should be examined together. Applicant's argument is not found persuasive because: as described in the Office Action of 9 February 2006, Groups I and II are directed to methods that are distinct both physically and functionally. For example, Group I requires search and consideration of reducing exposure of oligodentrocyte precursor cells to osteopontin, whereas Group II requires search and consideration of first increasing, then reducing exposure of oligodentrocyte precursor cells to osteopontin, and further requires search and consideration of inducing remyelination. Therefore, a search and examination of both methods in one patent application would result in an undue burden, since the searches for the both methods are not co-extensive, the classification is different, and the subject matter is divergent.

The requirement is still deemed proper and is therefore made FINAL. Claims 1-17 are pending. Claims 1-6 and 14-17 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Claims 7-13 are under examination.

Claim Objections

Claim 7 is objected to because of the following informalities: it recites non-elected inventions. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 7-13 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The instant claims are directed to a method for modulating differentiation of oligodendrocytes, comprising increasing exposure of oligodendrocyte precursor cells at a remyelination site to osteopontin (OPN) to enhance oligodendrocyte precursor number at the site, and then reducing exposure of the oligodendrocyte precursor cells to

OPN to enhance differentiation into oligodendrocytes, which enhance remyelination at the remyelination site. The specification asserts that based on the observation that osteopontin prevents differentiation of oligodendrocyte precursor cells, a reduction in osteopontin levels would result in accelerated differentiation of oligodendrocytes, and that reduction in differentiation is accompanied by proliferation of precursor cells (Specification, pp. 3, lines 7-14). A method based on the assertion is insufficient in enabling one of skill in the art to practice the invention as claimed in the absence of supporting evidence, because the relevant literature reports the use of OPN in opposite manner for the same purpose, i.e., inducing oligodendrocyte differentiation and enhancing remyelination. Selvaraju et al. (Mol. Cell. Neurosci., 2004, Vol. 25, pp. 707-721) teach a method of inducing differentiation of oligodendrocyte precursor cells and enhancing remyelination by increasing exposure of oligodendrocyte precursor cells to OPN. Selvaraju et al. teach that recombinant OPN induces proliferation of oligodendrocyte precursor cells (pp. 712, Fig. 5). Selvaraju et al. further teach that in mixed cortical cultures, recombinant OPN treatment stimulates myelin sheath formation. Selvaraju et al. showed that continuous treatment of the mixed cortical cultures with recombinant OPN leads to the differentiation phenotypes of the oligodendrocytes such as increasing MBP synthesis and forming myelin sheath in these cells (pp. 713, Fig. 6), and that the OPN-treated cultures were rich in oligodendrocytes, which wrap around axons and form myelin segments and internodes, whereas the untreated control cultures showed no segment (pp. 713, right column, 3rd paragraph). The Selvaraju et al. reference teaches a method which is in contradiction to the method of the instant

invention. The specification provides no objective evidence or working examples to lead one of ordinary skill in the art a reasonable expectation of success.

Further, claims 8 and 9 recite reducing exposure of oligodendrocyte precursor cells to OPN by inactivating osteopontin receptor or using an antibody that specifically binds to osteopontin. The specification, however, fails to teach how to inactivate the osteopontin receptor. The specification discloses on pp. 33 that the receptor-inhibiting molecule can be any molecule, a peptide, carbohydrate, organic molecule or combination thereof, and that an osteopontin antibody can be found to activate the osteopontin receptor (pp. 27, lines 5-19). Similarly, claims 12 and 13 recite that osteopontin is expressed by cells exposed to an osteopontin agonist or to an antibody that binds to osteopontin receptor. There is no teaching in the specification as to how to make and use these agonists, and what these cells are. Clearly, it would require undue experimentation by one of skill in the art to practice the invention as claimed without further guidance from the instant specification.

Due to the large quantity of experimentation necessary to determine how to modulate differentiation of oligodendrocytes and enhance remyelination by first increasing exposure of oligodendrocyte precursor cells to osteopontin, then reducing the exposure to osteopontin using unidentified molecules or antibodies, the lack of direction/guidance presented in the specification regarding same, the absence of working examples directed to same, the complex nature of the invention, the state of the prior art establishing that osteopontin stimulates differentiation and remyelination of oligodendrocytes, and the breadth of the claim which fails to recite particular activities

and structure features for agonists, antagonists and antibodies etc., undue experimentation would be required of the skilled artisan to make and/or use the claimed invention in its full scope.

Conclusion

NO CLAIM IS ALLOWED.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Xiaozhen Xie, Ph.D whose telephone number is 571-272-5569. The examiner can normally be reached on M-F, 8:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Janet L. Andres, Ph.D. can be reached on 571-272-0867. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JANET L. ANDRES
SUPERVISORY PATENT EXAMINER

Xiaozhen Xie, Ph. D.
March 16, 2006